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BEFORE THE ARIZONA CORPORATION COMMISSION

DOCKETED

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WILLIAM A. MUNDELL
CHAIRMAN
JIM IRVIN
COMMISSIONER
MARC SPITZER
COMMISSIONER

DOCKETED BY

IN THE MATTER OF THE INVESTIGATION
INTO QWEST CORPORATION'S COMPLIANCE
WITH CERTAIN WHOLESALE PRICING
REQUIREMENTS FOR UNBUNDLED
NETWORK ELEMENTS AND RESALE
DISCOUNTS.

DOCKET NO. T-00000A-00-0194

DECISION NO. 65451

PHASE IIA
OPINION AND ORDER

DATE OF HEARING: November 7 and 8, 2001

PLACE OF HEARING: Phoenix, Arizona

PRESIDING OFFICER: Lyn Farmer and Dwight Nodes

APPEARANCES:

Mr. Timothy Berg, FENNEMORE CRAIG, and Mr. John M. Devaney and Mr. Norton Cutler, PERKINS, COIE, LLP, on behalf of Qwest Corporation;

Ms. Mary Steele, DAVIS, WRIGHT, TREMAINE, LLP, on behalf of AT&T Communications of the Mountain States, Inc. and XO Arizona, Inc.;

Mr. Thomas H. Campbell, LEWIS AND ROCA, LLP, and Mr. Thomas Dixon, Jr., on behalf of WorldCom, Inc.;

Mr. Michael W. Patten, ROSHKA, HEYMAN & DeWULF, PLC, on behalf of Cox Arizona Telecom, Inc., Z-Tel Communications and McLeodUSA Telecommunications Services, Inc.;

Mr. Eric Heath on behalf of Sprint Communications Co., LP.;

Mr. Thomas H. Campbell, LEWIS & ROCA, LLP, on behalf of Time Warner Telecom of Arizona, LLC; and

Mr. Christopher C. Kempley, Chief Counsel and Ms. Maureen A. Scott, Staff Attorney, Legal Division, on behalf of the Utilities Division of the Arizona Corporation Commission.

BY THE COMMISSION:

This docket comes before the Arizona Corporation Commission ("Commission") for a decision pursuant to the Telecommunications Act of 1996, to establish unbundled network element ("UNE") and interconnection prices for Qwest Corporation ("Qwest") in the State of Arizona.

I. INTRODUCTION

On January 30, 1998, the Commission issued an Opinion and Order ("Decision No. 60635" or "*First Cost Docket Order*") setting permanent prices for interconnection and UNEs, as well as wholesale discounts, for US West Communications, Inc., nka Qwest.

The docket in the above-captioned case was opened to address issues related to Qwest's pricing of wholesale products and services. Phase I of this proceeding went forward on an expedited basis to address the issue of geographic deaveraging and, on July 25, 2000, the Commission issued Decision No. 62753 adopting interim geographically deaveraged UNE rates.

Phase II of this docket was opened to address issues raised by subsequent FCC orders and judicial decisions, and to establish permanent geographically deaveraged rates. By a subsequent Procedural Order, it was determined that Qwest's then-existing UNE rates, as determined in Decision No. 60635, would also be reviewed in Phase II. Hearings were held in Phase II and, on June 12, 2002, the Commission issued Decision No. 64922 in the Phase II proceeding establishing permanent geographically deaveraged wholesale rates for Qwest in Arizona. The Decision also established prices for a number of recurring and non-recurring charges for UNEs, interconnection, collocation, and other ancillary services.

Prior to the Phase II hearing, the parties¹ agreed to defer consideration of "switching" issues to a separate hearing, which has been labeled "Phase IIA." The Phase IIA hearing was held on November 7 and 8, 2001. Post-hearing briefs were filed by the parties on December 19, 2001. The issues raised in the Phase IIA proceeding are addressed below.

¹ The parties that presented expert witnesses and actively participated in the Phase IIA hearing were Qwest, Staff, and the following intervenor competitive local exchange carriers ("CLECs"): AT&T Communications of the Mountain States, Inc., XO Arizona ("AT&T"), and WorldCom, Inc. ("WorldCom").

II. DISCUSSION OF ISSUES

A. Switching Technology and Rate Elements

A telecommunications "switch" is essentially a computer that contains a processor, memory and storage devices, plugs in and out of the computer (*i.e.*, ports), and wires that run to and from other computers and networks. The switch includes operating system software and application software that performs some call switching and all of the features associated with the switch, such as call forwarding, call waiting, and voice mail.

The rate elements for switching fall into two general categories, local interconnection and switching UNEs. Local interconnection includes end office call termination and tandem switched transport. End office call termination is a usage sensitive charge based on minutes of use of a terminating end office switch to complete a local call to customers connected to the switch. Tandem switched transport includes the sub-elements of tandem switching and tandem transmission. Tandem switching is a per minute of use charge that applies when Qwest routes a call through a local tandem switch to complete a call. The tandem transmission sub-element includes a fixed (non-distance sensitive) per minute of use charge and a per minute, per mile charge for transmission of traffic from a tandem switch to a terminating end office switch for completion of a call (Qwest Ex. 11, at 3).

The other category, switching UNEs, also contains two categories, local tandem switching and local switching. The local tandem switching element includes the facilities that connect trunk distribution frames to a tandem switch and all the functions of the tandem switch itself. This rate element includes the facilities that establish a temporary transmission path between two switches, the routing of calls to operator services, and signaling conversion features. The recurring charges for local tandem switching include a DS1 local message port and use of local tandem switching billed on an originating per minute of use basis. The nonrecurring charges for this element include the charges associated with provisioning DS1 tandem trunk ports (*Id.* at 4).

The local switching sub-element of UNEs includes line-side ports, trunk-side ports, and access to the features and functions of the switch. A line-side analog port is a two-wire interface on the line side of an end office that extends to a main distribution frame ("MDF"). Qwest also offers digital line ports that provide two-wire integrated voice and data capability. With respect to trunk-

1 side ports, Qwest provides DS1 local message trunk ports, DS1 PRI ISDN trunk ports, and DS0
 2 analog trunk ports. Each of the line-side and trunk-side ports includes both recurring and
 3 nonrecurring costs (*Id.* at 5-8).

4 In setting switching rates in this phase of the docket, the Commission must determine the
 5 appropriate model to be employed and then must consider the size of the switch necessary for
 6 handling the projected calling demand on the switch.

7 **B. Cost Models**

8 Qwest proposes that its Switching Cost Model ("SCM") should be adopted for purposes of
 9 establishing each of the switching services and UNEs at issue in this phase of the proceeding,
 10 including local switching usage, line and trunk ports, and vertical features. According to Qwest, the
 11 SCM includes the realistic costs an efficient carrier would incur to provide switching, including costs
 12 associated with switch upgrades and line additions.

13 Qwest urges the Commission not to adopt the HAI model for establishing UNE rates in this
 14 phase of the proceeding. Qwest argues that there are several problems with the HAI model's
 15 calculation of switching costs that render adoption of the model in this phase inconsistent with
 16 TELRIC. Qwest claims that the FCC has cautioned against using the HAI model's switching inputs
 17 in several orders issued pursuant to §271 of the 1996 Act.² Qwest also asserts that the HAI switching
 18 module excludes switching costs that an efficient carrier would incur in operating its replacement
 19 network, such as costs for upgrades to switches, features, and to add lines to account for an increase
 20 in customer demand.

21 Qwest contends that the HAI model assumes that switches operate at an unrealistically high
 22 utilization rate of 96 percent with no spare capacity and no opportunity to increase capacity. Qwest
 23 argues that the HAI model design provides insufficient capacity which, if implemented in a real
 24 world situation, could lead to significant delays in provisioning service or an inability to provide
 25 service at all. According to Qwest, the HAI switching module understates TELRIC switching costs

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 27 ² See, e.g., Memorandum Opinion and Order, *In the Matter of the Application of Verizon New England, Bell Atlantic*
 28 *Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise*
Solutions) and Verizon Global Networks, Inc. for Authorization to Provide In-Region InterLATA Services in
Massachusetts, CC Docket No. 01-9, FCC 01-130 at ¶32 (rel. April 16, 2001).

1 by, among other things, excluding most of the costs associated with software applications needed to
2 provide switch features demanded by the CLECs. Based on these alleged deficiencies, Qwest claims
3 that the HAI switching module produces only about 60 percent of Qwest's forward-looking switching
4 investment.

5 Qwest asserts that its SCM should instead be used as the basis for establishing recurring costs
6 for switching UNEs. Qwest witness Brigham stated that the SCM's investment calculations are
7 based on the characteristics of each switch in Arizona and reflect the reasonably anticipated Arizona
8 specific usage of switching facilities (Qwest Ex. 1, at 12-17). Qwest argues that because the SCM
9 inputs are specific to Arizona, the SCM is superior to the HAI model's generic switching investment
10 data. Mr. Brigham testified that the primary cost drivers for the SCM investment calculations are: (1)
11 the prices that switching vendors charge for switches; (2) the busy-hour demand per line and per
12 trunk within a switch; (3) the number of lines a switch serves; and (4) the trunk to line ratio (*i.e.*, the
13 size of the ports) (*Id.* at 12).

14 Other key elements for calculating the SCM's switching costs are switch growth rates, the
15 administrative fill factor for both analog lines and integrated digital lines, and the administrative fill
16 factor for digital trunks. Qwest uses a growth rate of 4.8984 percent, an administrative fill factor of
17 95 percent for analog and digital lines, and an overall fill factor of 80 percent (*Id.* at 13-14). Mr.
18 Brigham stated that it is also necessary to have a separate fill factor for digital trunks to account for
19 the "modularity" of trunk ports (*i.e.*, the minimum amount of capacity that must be added to meet the
20 next increment of demand when current capacity is exhausted). He indicated that the average number
21 of trunks per trunk group is 64 and, in Qwest's experience, an average of 12 trunks are unused
22 because of modularity. Therefore, Qwest proposes an administrative fill factor for digital trunks of
23 81 percent (*Id.* at 14-15).

24 The CLECs and Staff advocate adoption of the HAI model. They claim that, unlike Qwest's
25 SCM, the HAI model relies on switching investment costs that have been developed by the FCC after
26 thorough investigation. The CLECs argue that the FCC used publicly available data on purchasing
27 and installing switches compiled by the FCC and other parties. The cost data relied upon by the FCC
28 includes information reflecting the costs of purchasing and installing new switches gathered from 20

1 states³. The CLECs contend that, contrary to Qwest's assertions, the HAI model as filed in this case
2 contains substantial Arizona specific information. Staff witness Dunkel testified that the HAI model
3 uses line counts, local minutes, intraLATA minutes, and other factors that are specific to Qwest in
4 Arizona (Tr. 438). Moreover, the CLECs claim that Qwest's model is no more specific to Arizona,
5 as evidenced by the fact that Qwest's switch contracts are regional contracts and its default inputs are
6 also region-wide (Tr. 202, 317).

7 The CLECs and Staff assert that the FCC switching costs were developed in the course of an
8 extensive contested proceeding in which US WEST and other ILECs participated. The CLECs argue
9 that, as a result, the HAI model is based on information that can be audited and verified from publicly
10 available information. Therefore, the CLECs and Staff urge the Commission to adopt the HAI model
11 for purposes of setting the switching recurring and nonrecurring costs in this docket.

12 In Decision No. 64922, we adopted the HAI 5.2a model for purposes of establishing recurring
13 costs in this proceeding. In that Decision, we agreed with the Staff and CLECs that the HAI 5.2a
14 model "provides the most appropriate measure of determining TELRIC-compliant, forward-looking
15 costs and prices for UNEs, when used as a starting point and subject to the determination of specific
16 inputs..." (Decision No. 64922, at 10). We also agreed with Staff and the CLECs that Qwest's ICM
17 (which includes the SCM switching model) is based primarily on its embedded network and costs and
18 fails to adequately incorporate efficiencies that should be recognized in a TELRIC environment. We
19 see no reason to depart from our prior Decision in this docket and we, therefore, adopt the HAI model
20 proposed by Staff and the CLECs for purposes of establishing rate elements for the switching issues
21 addressed in this Order. Consistent with our Decision in Phase II (Decision No. 64922), unless
22 otherwise indicated in the discussion of issues that follows below, the HAI model inputs advocated
23 by the CLECs shall be adopted for purposes of setting UNE rates in this Phase IIA proceeding.

24 **C. Growth and Utilization Factors**

25 Qwest contends that the key inputs into the model are switch growth rates, administrative fill
26 factor for both analog lines and integrated digital lines, and the administrative fill factor for digital
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28 ³ In the Matter of the Federal-State Joint Board on Universal Service, CC Docket No. 96-45, Tenth Report and Order, FCC 99-304 (rel. November 2, 1999) ("Inputs Order"), at ¶¶ 290, 299.

1 trunks. Qwest uses a growth rate of 4.8984 percent that is based on forecasted growth in switched
2 analog and integrated digital lines for 1999 through 2000. Qwest uses an administrative fill factor of
3 95 percent for analog and digital lines. According to Qwest, the five percent spare capacity resulting
4 from this assumption is essential to a sound engineering design and allows for equipment
5 malfunctions, line testing, special events, and administrative purposes. Qwest claims that the
6 administrative spare capacity also allows for circumstances where CLECs exceed their line forecasts.
7 Qwest argues that, because it needs spare capacity to meet short-term growth from additional
8 customers, its overall fill factor in the SCM is 80 percent. Qwest asserts that an 80 percent fill factor
9 is appropriate to allow for this short-term growth without the need to order and install additional
10 switch processor capacity (Qwest Ex. 1, at 13-14).

11 Qwest believes that it is also necessary to have a separate fill factor for digital trunks to
12 account for the "modularity" of trunk ports. Modularity is the next minimum amount of capacity
13 needed to meet the next increment of demand when current capacity is exhausted. Qwest states that
14 as it adds a new trunk group to meet demand, some spare capacity will exist until demand catches up
15 with the available capacity. According to Qwest, 12 of 64 trunks in a trunk group are typically
16 unused because of modularity. As a result, Qwest's proposed administrative fill factor for digital
17 trunks is 81 percent (*Id.* at 14-15).

18 Qwest recommends that if the Commission adopts the HAI model, a number of inputs should
19 be changed which would bring the results closer to those identified in Qwest's SCM. Specifically,
20 Qwest proposes that the cost per line in the HAI model should be increased to account for purchasing
21 additional growth lines. Qwest also contends that the utilization rate assumed in the HAI model
22 should be decreased to allow for additional growth investment.

23 The CLECs dispute the "underlying basis of Qwest's arguments. The CLECs contend that the
24 FCC has previously rejected Qwest's position that costs should be based on the investment required
25 to serve future demand (*Inputs Order*, ¶¶319, 330-332). According to the CLECs, the contention that
26 growth lines are more expensive than "getting started" lines installed with a switch is not supported
27 by the cost models and is inconsistent with the TELRIC concept of producing an estimate of the cost
28 of serving current demand (AT&T/WorldCom Ex. 10, at 7-8). The CLECs assert that the evidence

1 indicates that growth lines are not more expensive than getting started lines, and for one of the switch
2 types used in Qwest's model, the discounts available for growth lines exceed the discounts available
3 for getting started lines installed with the switch (Tr. 80-82; Qwest Ex. 4, TKM-07R).

4 The CLECs further contend that Qwest's proposed utilization rates are unsupported by the
5 record. Qwest witness Brigham testified that the SCM's utilization rate is approximately 80 percent
6 (Tr. 85), which is significantly below the 94 percent rate used in the HAI model and approved by the
7 FCC in the *Inputs Order*. AT&T/WorldCom witness Kelley stated that Qwest's proposed utilization
8 rate does not comport with TELRIC principles because the result of using such a low fill factor would
9 be subsidization of future customers by current customers (AT&T/WorldCom Ex. 10, at 8). The
10 CLECs claim that in accordance with TELRIC concepts, the Commission should reject Qwest's
11 proposal to incorporate lower fill factors into the HAI model.

12 The CLECs also assert that even if the Commission believed Qwest's proposal had some
13 merit, Qwest's proposed methodology would result in a double counting of costs. The CLECs claim
14 that under Qwest's recommendation, the HAI model's 94 percent fill factor would be replaced by an
15 80 percent factor with a 5 percent growth price additive per line (Qwest Ex. 4, at Exs. 9 and 10). The
16 CLECs argue that even Qwest's own model accounts for growth solely through the use of a fill factor
17 without an additive. The CLECs urge the Commission to reject Qwest's attempt to modify the HAI
18 model's utilization factor and deny Qwest's proposed growth additive.

19 We agree with the CLECs that Qwest's proposed growth rates do not properly reflect
20 TELRIC principles associated with an efficient provider. TELRIC is designed to estimate the cost of
21 providing service based on the known current level of demand. Allowing Qwest to include the cost
22 of capacity needed to serve undetermined or speculative future demand would unfairly burden current
23 customers by requiring them to in effect subsidize future customers. Such a result would not be
24 reflective of an efficient provider in a competitive market. We therefore reject Qwest's proposed
25 "growth additive" rates. With respect to fill factors, we agree that Qwest's recommendation reflects
26 the actual costs an efficient carrier would incur. In this instance, as in our findings on fill factors for
27 High Capacity Loops in our *Phase II Opinion and Order*, "the fill factors proposed by the CLECs
28 represent even more than the ideal configuration neither deployed by the ILEC nor to be used by the

competitor.⁴ We agree with Qwest that some degree of spare capacity allows an efficient carrier to meet short-term growth from additional customers, and as in our *Phase II Opinion and Order* where we adopted the HAI model's average fill factor of 48.8% for distribution plant, we believe that the FCC's *Inputs Order* requires us to 'recognize fills that are sized to meet current demand, including an amount of capacity to meet additional demand.'⁵ In both our *First Cost Docket Order*⁶ and our *Phase II Opinion and Order* we have recognized that Arizona is a 'high growth market'⁷ and that growth requires an efficient allocation of spare capacity to allow efficient planning and to adapt to CLEC growth in the market. We therefore adopt Qwest's proposed fill factors for purposes of this proceeding.

10 D. Upgrade Costs

Qwest has also proposed that the HAI model should be adjusted to include the anticipated costs of upgrading the switches assumed in the model. Qwest claims that one of the flaws with the HAI model is that it fails to account for switching upgrades. Qwest argues that even the CLEC witnesses agreed that switch upgrades are a legitimate cost of doing business, yet the CLECs do not recognize the need for inclusion of switch upgrade costs. Qwest asserts that the CLECs improperly rely on the FCC's *Inputs Order*, which Qwest claims is not to be used for pricing local interconnection service and UNEs. Qwest contends that the FCC only tried to reflect the cost associated with a new switch, but intentionally excluded the investment associated with upgrades.

The CLECs claim that Qwest's proposal is inconsistent with TELRIC principles, as recognized in the FCC's *Inputs Order*. In that Order, the FCC rejected the ILECs' recommendations that the costs associated with purchasing and installing switching equipment upgrades should be included (*Id.* at ¶317). According to the CLECs, the future costs of switch upgrades that have not yet been released are properly excludable from charges that current customers must pay. The CLECs claim that the HAI model is consistent with TELRIC methodology because it estimates costs based on technology, equipment, and architectures that are currently being deployed in the public switch

⁴ ACC Decision No. 64922, (June 12, 2002) Pg. 65, Lines 26-27.

⁵ *Id.* at Pg. 17, Lines 7-9

⁶ ACC Decision No. 60635, (January 30, 1998)

⁷ See, e.g., Decision No. 64922 at Page 14, Line 4

1 telephone network (AT&T/WorldCom Ex. 10, at 4-5). The CLECs assert that the costs of
2 hypothetical future upgrades are not appropriate.

3 We agree that the costs associated with unknown upgrades should be excluded. Under the
4 TELRIC methodology, technical advances that are not yet available or widely in use are not properly
5 included in the cost of the switch. In addition, as recognized by the FCC (*Inputs Order*, ¶317), an
6 upgraded older generation switch may not be as cost effective as a new switch that contains similar
7 features. As CLEC witness Kelley noted, the adjustments to the model employed by the FCC were
8 designed to account for changes in switching costs that occurred since the last data were gathered
9 (AT&T/WorldCom Ex. 10, at 5). In addition, upgrades could have the effect of extending the life
10 beyond the 10-year economic life assumed in the HAI model. Although upgrades may be a cost of
11 doing business, it does not mean that such unknown costs for speculative technological advances
12 should be included in a TELRIC model. Accordingly, Qwest's request to include upgrade costs is
13 denied.

14 **E. Remote Collocation**

15 Remote Terminal Collocation provides space in remote cabinets in areas outside Qwest's
16 central offices. Qwest witness Malone testified that the remote cabinets provide CLECs with
17 electrical power, heat dissipation, and access to feeder distribution interface terminations. Qwest has
18 proposed recurring charges that include maintenance costs associated with the equipment and for a
19 portion of the remote pedestal. Qwest has also proposed nonrecurring charges for the cost of the
20 cabinet space and the cost of the work and materials associated with placement of the cabinet and
21 providing access to power (Qwest Ex. 11, at 12-13).

22 WorldCom witness Morrison stated that the advantage to remote collocation is that it provides
23 CLECs access to a layer of Digital Subscriber Line ("DSL")⁸ customers that are typically not
24 accessible from Qwest's central offices because they are located beyond the 18,000 feet "boundary"

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27 ⁸ Mr. Morrison described DSL technology as transmission technology used on circuits running between the central office
28 and a customer's premises. He indicated that, historically, DSL has been provided on loops that are exclusively copper,
but that new DSL technology allows the service to be provided on hybrid loops that are fiber optic from the central office
to a remote terminal location and then on copper pairs to the customer premise (WorldCom Ex. 5, at 6).

1 of the central office. He indicated that remote collocation allows CLECs to have access to the same
2 universe of customers that are available to Qwest (WorldCom Ex. 5, at 6).

3 Mr. Morrison stated that a disadvantage of remote collocation is that fewer customers are
4 available from the remote terminal compared to a central office. He also claimed that lack of space in
5 a remote terminal reduces the likelihood that CLECs will pursue remote collocation because ILECs
6 typically refuse to allow remote collocation if space is not available (*Id.* at 7-8).

7 Staff witness Dunkel opposed Qwest's proposed recurring and nonrecurring charges for
8 remote collocation. Mr. Dunkel stated that Qwest's proposed 33 percent fill factor for remote
9 collocation does not recognize an assumption of efficient utilization of the remote cabinet space.
10 According to Mr. Dunkel, adoption of such a low fill factor would result in CLECs paying three
11 times as much for the space as they would be using. Staff asserts that a fill factor of approximately
12 61 percent more accurately represents the operations of an efficient provider (Tr. 441-442).

13 Mr. Dunkel also disputes Qwest's contention that 15 percent of every remote terminal should
14 be set aside for future CLEC use. He claims that there is no legal requirement that any "DA Hotel"
15 space should be set aside for CLECs and the most efficient means of provisioning remote collocation
16 is to provide space to CLECs on an as-requested basis. Staff's other recommended adjustments
17 include: utilizing the 15 percent overhead factor from Decision No. 60635 instead of Qwest's
18 proposed 32 percent overhead factor; eliminating the "building factors" which are directly included
19 as the cost of the cabinet; using cost of money and income tax factors that are based on a 9.61 percent
20 cost of money; and using the depreciation expense based on the Commission prescribed depreciation
21 parameters (Staff Ex. 8, at 8).

22 We agree, for the most part, that Staff's proposed adjustments reflect more appropriate prices
23 for the provision of remote terminal collocation service to CLECs. Based on an efficient, forward-
24 looking operation, Staff's proposed 61.25 percent fill factor is reasonable. Adoption of Qwest's
25 proposed 33 factor would have the effect of requiring CLECs to pay for three times as much space as
26 they use. We also agree with Staff that there is no requirement that 15 percent of every remote
27 terminal must be set aside for future CLEC use regardless of the level of interest in such facilities. In
28 the event that a CLEC requests service at a remote terminal, however, Qwest must accommodate the

1 CLEC's request for remote collocation. We also agree with Staff's proposed adjustments for
2 eliminating the building factors; using a 9.61 percent cost of money; and depreciation expense.

3 With respect to Staff's proposed 15 percent overhead factor, we rejected that proposal in the
4 prior Phase II Order (Decision No. 64922, at 72-73). In that Decision, we adopted the 10.4 percent
5 overhead factor contained in the HAI model and recognized separately network operations and
6 general support assets costs (*Id.*). The same overhead factor treatment should be applied for purposes
7 of determining the remote collocation costs.

8 **F. Custom Routing**

9 Custom routing is a software function of the Qwest switch that routes a CLEC customer's call
10 to a trunk that will carry the call to the CLEC's directory assistance ("DA") and operator services
11 ("OS") provider. Each dedicated or separate trunk provides the signaling needed to route calls from
12 the customer to the OS/DA provider and track billing information for each call. Qwest proposes non-
13 recurring charges for custom routing based on: development of custom line class code; line class code
14 installation per switch; and all other customer routing (Qwest Ex. 11, at 13-14).

15 WorldCom disputes Qwest's claim that dedicated trunks are required to provide custom
16 routing to CLECs. WorldCom witness Caputo states that WorldCom seeks to route its OS/DA traffic
17 to existing, shared access, Feature Group D trunks between the Qwest and MCI Long Distance
18 networks. This routing method would enable WorldCom to provide OS/DA to its customers using its
19 own operators (WorldCom Ex. 6, at 3-4).

20 Qwest contends that WorldCom's proposal is not technically feasible because the DA and OS
21 signaling are not the same as MOS and Feature Group D signaling. Therefore, according to Qwest,
22 Feature Group D and OS/DA traffic cannot be aggregated on the same trunks (Tr. 221-223). Qwest
23 argues that only its proposed technical solution will work and thus Qwest's proposal should be used
24 as the basis for determining the costs for custom routing.

25 Although WorldCom claims that dedicated trunks are not required to accomplish custom
26 routing, the evidence presented at hearing by Qwest indicates that Feature Group D and OS/DA
27 traffic cannot be aggregated on the same trunks because they involve different, non-compatible types
28 of signaling. WorldCom also contends that, regardless of signaling compatibility, new technology is

1 being developed that will allow OS/DA traffic to be sent across Feature Group D trunks using switch
 2 translation. However, WorldCom witness Caputo conceded that no company is currently employing
 3 this technology on a commercial basis (Tr. 422). Given the still speculative nature of an emerging
 4 technology, we agree with Qwest that custom routing must be provided, at this time, via dedicated
 5 trunks.

6 With respect to custom routing costs, WorldCom argues that Qwest's proposed direct costs
 7 are excessive. WorldCom points to Qwest's cost study as an indicator of the unreasonableness of the
 8 costs. As an example, WorldCom cites to Qwest's proposal to charge CLECs for 3 to 4 hours of time
 9 for selecting and inputting Line Class Codes (Tr. 120-124; WorldCom Ex. 2).

10 We do not believe that WorldCom has presented evidence on the record to warrant rejection
 11 of Qwest's proposed direct costs for custom routing. It is not sufficient for WorldCom to allege that
 12 the proposed direct costs are unreasonable "on their face" (WorldCom Brief at 13). Qwest's
 13 proposed direct costs for custom routing shall, therefore, be adopted.

14 Regarding other overhead costs for directly assigned, directly attributable and common costs,
 15 the same treatment accorded to overhead costs in Decision No. 64922 will be adopted. Accordingly,
 16 a 10.4 percent overhead factor will be applied as stated therein.

17 **G. Unbundled Packet Switching**

18 Unbundled Packet Switching⁹ ("UPS") provides the functionality of delivering packet data
 19 units via a virtual channel between a CLEC demarcation point and the Remote Terminal Digital
 20 Subscriber Line Access Multiplexer ("DSLAM"). UPS includes transport facilities between the
 21 DSLAM and the Qwest central office, DSLAM functionality, and the ATM electronics necessary to
 22 generate a virtual channel (Qwest Ex. 11, at 8). Pursuant to the *UNE Remand Order*, Qwest is
 23 obligated to offer UPS only in situations where it has deployed digital loop carrier ("DLC") systems,
 24 no copper facilities are available, and Qwest has placed a DSLAM in a remote terminal but has not
 25 permitted the CLEC to collocate its own DSLAM at the same remote Qwest premises (*Id.* at 10).

26
 27 ⁹ "Packet Switching" refers to switches that route messages in the form of units or "packets" between network users. *In*
 28 *the Matter of the Implementation of the Local Competition Provision of the Telecommunications Act of 1996; Third*
Report and Order and Fourth Further Notice of Proposed Rulemaking, CC-96-98; FCC 99-238 ¶302 (rel. Nov. 5, 1999).
 ("UNE Remand Order").

1 AT&T argues that the CLECs' concern is that the rate elements proposed by Qwest for UPS
2 would not allow a CLEC to provide advanced services through the use of packet switching provided
3 by Qwest. AT&T witness Chandler stated that, while Qwest is free to offer higher level services, the
4 rate elements proposed by Qwest would allow a CLEC to provide only the most basic level of
5 advanced services (AT&T Ex. 8, at 12-13). AT&T also contends that the cost study prepared by
6 Qwest for packet switching does not comply with TELRIC principles because it assumes a copper-
7 based DLC system which is not forward-looking technology. As a result, AT&T claims that Qwest
8 has increased the costs it proposes above those that would be available if forward-looking
9 assumptions were used (*Id.* at 13-15).

10 We agree with Qwest that the ability to provide advanced services is a function of customer
11 premises equipment, not the DSLAM or the ATM network. Thus, as Qwest points out, CLECs are
12 free to offer advanced services on their own and Qwest's UPS offering does not limit the products
13 that a CLEC can offer. A copper-based DLC system will continue to be the industry standard for the
14 foreseeable future and, therefore, we believe that Qwest's UPS cost study is forward-looking and
15 TELRIC compliant.

16 **H. Recurring Analog Line Port Rate and Vertical Features**

17 In order to calculate recurring costs for the analog line port UNE, Qwest looks at three key
18 components: the analog line port which runs from the switch to the CLEC collocation area; feature
19 cost per line; and capital lease "right to use" fees assessed by vendors for the use of their intellectual
20 property. Based on its analysis of these elements, Qwest proposes an analog line port recurring rate
21 of \$2.45 comprised of \$1.28 for analog line port costs, \$0.65 for features, and \$0.51 for capital lease
22 software expenses (Qwest Ex. 1, at 14-15).

23 Mr. Brigham stated that the analog line port cost component is calculated based on the
24 forward-looking investment for the analog port through the SCM, converted into a monthly cost via
25 the application of cost factors in the ICM. Qwest criticizes Staff's recommendation for analog line
26 ports, which proposes a recurring rate of \$1.61, based on \$1.10 for analog line port costs and \$0.51
27 for features, because Staff witness Dunkel does not include any costs for "right to use" fees. Qwest
28 argues that Mr. Dunkel's recommendation is inconsistent with TELRIC because it does not account

1 for all necessary cost components. Qwest contends that Staff's proposed \$1.10 analog line port cost
2 improperly relies on the HAI model's understated calculations which fail to recognize the significant
3 investment required for Qwest to meet CLEC demand for switching and features. Qwest claims that
4 Staff's recommended cost exclusions improperly reduces the recurring analog line port rate and
5 would not allow Qwest to recover legitimate, forward-looking expenses (Qwest Ex. 5, at 94-95).

6 Qwest argues that Mr. Dunkel has misinterpreted how Qwest analyzed data related to Centrex
7 21 features. Qwest asserts that, in developing its analog line port rate, the Company estimated total
8 investment in both retail and wholesale features and then divided by the total number of features sold.
9 Qwest contends that its inclusion of POTS, wholesale, and Centrex quantities is necessary to
10 calculate the total incremental cost of all features in Arizona because the same hardware and software
11 provides features for both wholesale and retail customers. Qwest claims that its calculation does not
12 mean that it is developing a cost solely for the retail Centrex 21 offering or any other retail service, or
13 that costs properly attributed to those offerings have instead been loaded into the proposed UNE
14 rates. Qwest contends that it offers CLECs the same feature functionality offered to retail and
15 Centrex 21 customers as part of the analog line port UNE. Qwest states that adding the hardware and
16 software costs for features would increase the recurring rate for the analog line port by \$1.06 above
17 the HAI switching module recommendation of \$0.90, and \$0.35 above Staff's recommendation.
18 Qwest proposes that the Commission adopt its SCM estimate of \$2.45 for a line port or, at a
19 minimum, a rate of \$2.06 that results from Qwest's modifications to the CLEC and Staff proposals
20 (Qwest Brief at 19).

21 The CLECs contend that the switching costs developed by the FCC and used in the HAI
22 model already includes costs associated with "features." The CLECs argue that there is no need to
23 include additional features costs in the HAI analog port calculation because expenses associated with
24 the application software purchased by other carriers are included in the FCC calculation in an amount
25 sufficient to cover the added features cost proposed by Qwest.

26 Staff contends that since "feature" costs are to be recovered in the "port" rate, the key
27 question is how much additional feature cost, if any, should be added to the port cost that flows from
28 the HAI model. According to Staff, the switching inputs adopted by the FCC include costs incurred

1 at installation, and within three years of installation, but do not include later upgrades (Staff Ex. 8, at
2 11-12). Staff believes some additional feature cost is appropriate, but disagrees with the magnitude
3 of Qwest's proposed charges. Staff claims that the current \$1.61 recurring charge for analog line-side
4 port should be maintained. The basis for Staff's position is that the HAI model produces a recurring
5 port rate of \$1.10, thereby effectively allowing a \$0.51 per month charge for features above the
6 features cost that is already included in the HAI model. Staff argues that the \$1.61 recurring charge,
7 including features, is a reasonable charge that falls within the range recommended by the other
8 parties (Staff Ex. 8, at 13). With respect to "right to use fees," Mr. Dunkel contends that Qwest's
9 "Capital Lease" study includes an overstated markup over direct costs of 32 percent for overheads
10 (*Id.*).

11 We believe Staff's position, as reflected in the testimony of Mr. Dunkel, represents a
12 reasonable position on this issue. As Mr. Dunkel points out, the CLECs contend that the HAI model
13 already includes the cost of features and therefore no additional charge should be attached to the
14 \$1.10 port recurring cost produced by the HAI. On the other hand, Qwest has proposed including a
15 separate \$0.65 recurring charge for features as an element of its overall \$2.45 analog line port rate
16 (*Id.* at 11-12). Staff's recommendation to continue to use the \$1.61 analog port rate is within the
17 range proposed by the competing parties and with the net effect of the conclusions adopted in this
18 Decision, reflects a reasonable middle ground approach to resolving this issue. For these reasons, we
19 adopt an analog port rate of \$1.61 in this proceeding.

20 **I. Non-Recurring Analog Line Port Rates**

21 Staff witness Dunkel testified that he believes Qwest's non-recurring analog line port rate
22 should remain at its current level of \$42.58. Qwest asserts that it properly estimates its non-recurring
23 rates by factoring in the activities an efficient carrier would undertake to process an order or provide
24 a service. Qwest argues that Mr. Dunkel's analysis should be rejected because it violates TELRIC
25 principles. According to Qwest, its activities, work times, and probabilities of occurrence are all
26 supported by input from subject matter experts, whereas Mr. Dunkel's recommendation is based only
27 on his belief that Qwest's proposed rate is too high. Qwest contends that neither Mr. Dunkel nor the
28 CLECs contested the actual activities or times produced in Qwest's cost study but they nonetheless

1 opposed Qwest's rate. Qwest claims that its cost study includes over two hours of manual activity to
 2 design the circuit for the port and run jumpers in the central office, to test the switch port, and to
 3 update the information in the switch database. Qwest points out that AT&T's cost model does not
 4 recognize any time for these activities and includes a 98 percent flow-through assumption. Qwest
 5 asserts that the Staff and CLEC positions are unreasonable and, therefore, recommends that the non-
 6 recurring rate advocated by Staff and the CLECs be rejected.

7 Mr. Dunkel testified that, because some of the key inputs are based upon judgment, the cost
 8 study results may vary greatly. Mr. Dunkel points out that Qwest's proposed non-recurring analog
 9 port rate is \$145.57, while the CLECs' proposed installation rate for the same item is only \$1.68. Mr.
 10 Dunkel believes that the current rate of \$42.58 is reasonable based on his opinion that Qwest's cost
 11 studies assume a large amount of manual order activities, whereas the CLECs assume automated data
 12 transfer from the CLECs to Qwest (Staff Ex. 8, at 9-10).

13 We agree with Staff that a reasonable result is achieved by assuming some of the activities
 14 associated with installation of the analog port will be automated and some duties will require manual
 15 activity. We are not convinced by the arguments presented by either Qwest or the CLECs that the
 16 current rate of \$42.58 is unreasonable. Mr. Dunkel's proposal falls between the two extremes
 17 advocated by Qwest and the CLECs and we believe maintains an appropriate balance between those
 18 positions. Accordingly, we adopt Staff's recommendation on this issue.

19 **J. Analog Line-Side Port and Usage**

20 The HAI model proposed by the CLECs in this case assigned 70 percent to the usage element
 21 and 30 percent to the port element. Qwest is critical of the HAI model's assignment of costs because
 22 the CLECs have proposed in other states that 60 percent of costs should be assigned to the port
 23 element and 40 percent to usage.¹⁰ CLEC witness Chandler stated that the more recent 60/40 split was
 24 based on a recommended decision by an Administrative Law Judge at the New York Public Service
 25 Commission which determined that an appropriate rate structure would assign no more than 40
 26 percent of switching costs to usage¹⁰. The CLECs state that they do not oppose assigning 60 percent
 27

28 ¹⁰ *Proceeding on Motion for the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements*, Case No. 98-C-1357 (May 16, 2001). The New York Commission agreed with the concept of the ALJ's

1 to the cost of the port element and 40 percent to usage, consistent with proposals made more recently
2 in other states. Given the CLECs' agreement that a 60/40 split between port and usage is more
3 appropriate (Tr. 326, 338), we will adopt that ratio for purposes of this proceeding.

4 **K. Analog Line Circuit Offset**

5 Qwest contends that the HAI model should not include an adjustment to account for cost
6 savings associated with increased use of DLC technology. Qwest claims that the FCC specifically
7 rejected the analog line circuit offset because depreciation data used to calculate the switch
8 investment already reflected the savings associated with digital lines (*Inputs Order*, ¶¶325 and 327).
9 Qwest urges the Commission to reject the CLECs' position on this issue as being unsupported and
10 contrary to the FCC's findings.

11 The CLECs argue that an analog line circuit offset is appropriate because the switch
12 information used by the FCC in developing its analysis reflects significantly lower percentages of
13 DLC technology usage than is likely to be present in a forward looking network. The CLECs claim
14 that Qwest's current DLC deployment is substantially lower than the DLC assumed by either the
15 Qwest ICM or the HAI model. The CLECs contend that because the analog line circuit offset
16 recognizes that costs will be lower in a forward looking network due to increasing usage of DLC,
17 Qwest's recommendation to eliminate the offset should be rejected.

18 Although Qwest's witness conceded that DLC technology requires fewer line cards (Tr. 93),
19 we agree with Qwest that the FCC specifically rejected the arguments raised by the CLECs in the
20 *Inputs Order* docket. We believe the FCC's analysis properly found that the offset for digital lines
21 should be set at zero. The FCC stated in that Order that there was no basis on which to quantify
22 savings beyond those used in developing the switch cost. The FCC added that the depreciation data
23 used to determine the switch costs reflect the use of digital lines. We do not believe the CLECs have
24 presented sufficient evidence in this case to support their claim that an additional offset for analog
25 line circuit should be included.

26
27
28 adjustment, but reduced the usage-sensitive switching costs from 40 percent to 34 percent. New York Public Service
Commission, *Order on Unbundled Network Element Rates* (January 28, 2002), at 36.

1 **L. Tandem Switching**

2 One of the rate elements developed by the switching cost models is the tandem switching rate
3 element. Qwest contends that the HAI model assumes too few tandem trunks in determining the total
4 investment required. Qwest witness Fleming testified that the HAI model's assumption of 31,125
5 tandem trunks is improper and should reflect approximately three times that amount (Qwest Ex. 5, at
6 Ex. 10).

7 The CLECs argue that Qwest's proposal demonstrates that it does not recognize how the HAI
8 model develops tandem costs. CLEC witness Chandler stated that Mr. Fleming misinterpreted the
9 way in which the HAI model computes the number of tandem and direct trunks required to carry
10 intraLATA toll and access traffic and included special access facilities in his calculation
11 (AT&T/WorldCom Ex. 8, at 4). Mr. Chandler claims that correcting these errors shows that the HAI
12 model is conservative in its tandem trunk estimates and should be adopted by the Commission (*Id.*).

13 We believe Mr. Chandler adequately explained in his testimony that the HAI model produces
14 an appropriate estimation of tandem trunks for Qwest's Arizona network. Mr. Chandler testified that
15 Qwest's assumption of 97,000 tandem trunks is based on incorrect assumptions that, once corrected,
16 would reduce the trunk count to 28,350 (*Id.* at 3). Mr. Chandler's analysis reflects that Qwest's
17 calculations, if corrected for the mistaken assumptions, produces a result that is actually almost 3,000
18 trunks lower than the 31,125 tandem trunks assumed by the HAI model (*Id.* at Ex. RC-1). We
19 therefore adopt the CLECs' recommendation on this issue.

20 **M. Billing Costs**

21 Qwest claims that the HAI model underestimates switching costs because it does not include
22 the cost of billing for switch usage. According to Qwest, collecting the calling volumes, compiling
23 the bills, and documenting the charges cause Qwest to incur costs.

24 At the hearing, CLEC witness Chandler conceded that Qwest incurs expenses associated with
25 billing and agreed that such expenses were legitimate business costs. Although Mr. Chandler
26 testified that he assumed the HAI model included billing costs, he could not state where in the model
27 those costs were included (Tr. 326-327). However, in its exceptions, AT&T cited an exhibit which it
28 argues shows that billing costs are included in the HAI model.

1 We agree with Qwest that costs associated with billing usage are legitimate business
2 expenses. Therefore, we will adopt the HAI model for purposes of establishing billing inputs in this
3 proceeding, but will allow the parties to show what appropriate billing costs are, and are not, included
4 in the HAI model, in Phase III of this proceeding.

5 **N. Dial Equipment Minutes v. Billable Minutes**

6 In calculating switching rates, it is necessary to not only determine costs but also to calculate
7 the units of demand over which the costs will be spread. Because the HAI model uses dial equipment
8 minutes rather than billable minutes, Qwest claims that rates are improperly reduced by \$.00008 per
9 minute.

10 Originating dial equipment minutes are measured from the time the calling party picks up the
11 phone. According to Qwest, industry practice is to apportion switching costs to customers based on
12 minutes measured from when the called party answers for intraLATA calls or until the trunk to the
13 IXC is seized in the case of interLATA calls. As such, billing minutes are measured from the time
14 the called party answers. Qwest witness Fleming stated that the difference between dial equipment
15 minutes (used by the HAI model) and billable minutes (used by Qwest) is 4.4 percent, which would
16 result in a corresponding 4.4 cost per minute increase if the HAI model used billable minutes as the
17 correct denominator (Qwest Ex. 5, at 94-95). At hearing, CLEC witness Chandler agreed that, if
18 Qwest uses billable minutes, it would be appropriate to adopt that approach and adjust the HAI model
19 accordingly (Tr. 328-329).

20 We agree with Qwest that the billable minutes approach is appropriate for setting switching
21 rates in this case. Accordingly the HAI model input should be adjusted consistent with Qwest's
22 recommendation.

23 **O. Miscellaneous**

24 Staff points out that in the Phase II Order (Decision No. 64922), the Commission determined
25 that Qwest's proposed labor and materials costs were overstated. In order to remedy this
26 overstatement of labor and materials, we reduced Qwest's material costs by 50 percent and also
27 reduced the Company's claimed labor costs (*Id.* at 39, 69). Because many of the services provided to
28

1 CLECs are not established by the HAI model (e.g., collocation), we agree with Staff that, for
 2 purposes of consistency, the findings made in Decision No. 64922 should also be applied to Qwest's
 3 claimed labor and material costs in this Phase IIA proceeding.

4 * * * * *

5 Having considered the entire record herein and being fully advised in the premises, the
 6 Commission finds, concludes, and orders that:

7 FINDINGS OF FACT

8 1. Qwest is certificated to provide local exchange and intraLATA telecommunications
 9 services to the public in Arizona, pursuant to Article XV of the Arizona Constitution.

10 2. In the *First Cost Docket Order* (Decision No. 60635), the Commission set prices for
 11 interconnection and UNEs, as well as wholesale discounts.

12 3. The docket in the above-captioned case was opened to address Qwest's pricing of
 13 wholesale products and services. Phase I of this proceeding, addressing geographic deaveraging, was
 14 considered on an expedited basis and resulted in a Decision being issued on July 25, 2000 (Decision
 15 No. 62753).

16 4. Phase II of this docket was opened to address issues raised by subsequent FCC orders
 17 and judicial decisions, and to establish permanent geographically deaveraged rates. By a subsequent
 18 Procedural Order, it was determined that Qwest's then-existing UNE rates, as determined in Decision
 19 No. 60635, would also be reviewed in Phase II. Hearings were held in Phase II and on June 12, 2002,
 20 the Commission issued Decision No. 64922 which established permanent geographically deaveraged
 21 rates and prices for a number of recurring and non-recurring charges for UNEs, interconnection,
 22 collocation, and other ancillary services.

23 5. Prior to the start of the Phase II hearing, the parties agreed to defer consideration of
 24 "switching" issues to a separate hearing, which was labeled "Phase IIA."

25 6. Hearings on the Phase IIA switching issues were held on November 7 and 8, 2001.
 26 Post-hearing briefs were filed on December 19, 2001.

27 7. The Commission has analyzed the issues and the evidence as presented by the parties
 28 and has resolved the issues as stated in the Discussion above.

1 8. The Commission hereby adopts the Discussion and incorporates the parties' positions
2 and the Commission's resolution of the issues herein.

3 **CONCLUSIONS OF LAW**

4 1. Qwest Corporation is a public service corporation within the meaning of Article XV of
5 the Arizona Constitution.

6 2. Qwest Corporation is an incumbent LEC within the meaning of 47 U.S.C. §252.

7 3. The Commission has jurisdiction over the parties and of the subject matter in this
8 docket.

9 4. The Commission's resolution of the issues pending herein is just and reasonable,
10 consistent with the 1996 Act, FCC Orders and Rules, the Commission's Rules, and all applicable
11 law, and is in the public interest.

12 5. The burden of proof to establish a proper cost basis under the 1996 Act is on Qwest
13 Corporation.

14 6. The prices for unbundled network elements are "based on the cost (determined
15 without reference to a rate of return or other rate-based proceeding) of providing the interconnection
16 or network element [and are] nondiscriminatory."

17 **ORDER**

18 IT IS THEREFORE ORDERED that the Commission hereby adopts and incorporates as its
19 Order the resolution of the issues contained in the above Discussion.

20 IT IS FURTHER ORDERED that the parties shall file within 30 days of the date of this
21 Decision, a joint schedule setting forth all rates and charges approved herein.

22 IT IS FURTHER ORDERED that to the extent issues are not addressed in this Decision, such
23 issues are deferred to the Phase III.

24 IT IS FURTHER ORDERED that Qwest shall complete implementation, with true-ups,
25 within 60 days of the compliance filing, or sooner, if possible. If Qwest is unable to comply with this
26 implementation timeframe, it must file a request for extension of time prior to the deadline, indicating
27 the reasons why it is unable to comply and with a proposal of an alternate date for implementation.

28 ...

1 IT IS FURTHER ORDERED that the rates and charges approved herein shall be effective
2 immediately.

3 IT IS FURTHER ORDERED that this Decision shall become effective immediately.

4 BY ORDER OF THE ARIZONA CORPORATION COMMISSION.

5
6   
7 CHAIRMAN COMMISSIONER COMMISSIONER
8

9
10 IN WITNESS WHEREOF, I, BRIAN C. McNEIL, Executive
11 Secretary of the Arizona Corporation Commission, have
12 hereunto set my hand and caused the official seal of the
13 Commission to be affixed at the Capitol, in the City of Phoenix,
14 this 12th day of December, 2002.

13 
14 BRIAN C. McNEIL
EXECUTIVE SECRETARY

15 DISSENT _____
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SERVICE LIST FOR:

QWEST CORPORATION

DOCKET NO.:

T-00000A-00-0194

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